

*Lunar Halos* were noted as follows: 1st, Ala., Dak., D. C., Iowa, Me., Md., Mich., N. J., N. Y., Ohio, 2nd, Ala., Conn., D. C., Ill., Ind., Iowa, Md., Minn., N. H., N. J., N. Y., N. C., Ohio, R. I., Tenn., Wis. 3rd, Iowa, Me., N. C., Tenn. 4th, Cal., Del., Me., N. J., Ohio. 5th, D. C., Tenn., Wis. 7th, D. C., Fla., Ill., Ind., Neb., Ohio, Vt. 8th, D. C. 9th, Ohio. 10th, D. C. 12th, N. J. 14th, Minn. 19th, Dak., Ind. 20th, Ga., Kan., Mo., N. J., N. Y., W. Va., Va. 21st, Fla. Ill., Iowa, Kan., Me., N. Y., N. C., Ohio. 22nd, Ala., Ark., Ga., Iowa, Kann., Miss., Neb., Ohio, Tenn., Texas, Wis. 23rd, Conn., Dak., Del., D. C., Iowa, Md., Mass., Minn., Neb., N. J., Ohio, Penn., Utah, Va. 24th, Conn., Dak., Iowa, Mass., Mich., Minn., N. J., N. Y., R. I., Texas. 25th, Ind., Minn., Neb., W. Va. 26th, Cal., Iowa, Md., Neb., Texas, Va. 27th, Cal., Del., D. C., Iowa, Md., Neb., N. J., N. C., Penn., Tenn., Va., Wis. 28th, Dak., D. C., Ind., Iowa, Me., Mass., Neb., N. H., N. J., N. Y., R. I., Vt., Wis. 29th, Cal., Dak., Ind., Iowa, Kan., Mich., Neb., Tenn. 30th, Al., Ill., Ind., Iowa, Kan., Me., Mass., Minn., Neb., N. Y., Penn., Tenn., Wis. 31st, Ga., Ill., Ind., Iowa, Minn., Mich., N. Y., Ohio, Penn., Tenn., W. Va.

*Mirage*.—3rd, Breckenridge, Minn. 4th, 26th and 27th, Great Bend, Kan. 11th and 13th, Tybee Island, Ga.

## MISCELLANEOUS PHENOMENA.

*Polar Bands* were observed as follows: 1st, Breckenridge, Minn. 4th, Detroit, Mich.; Duluth, Minn. 5th, Duluth, Minn.; Dubuque, Iowa. 6th, Iowa City, Iowa; Carthage, Ohio; Plattsmouth, Neb. 7th, Guttenburg, Iowa. 8th, Auburn, N. H. 10th, Eastport, Me. 11th, Tybee Island, Ga. 13th, Carthage, Ohio; Wytheville, Va. 14th, Danville, Ky.; Carthage, Ohio. 15th, Frechold, N. J.; Carthage, Ohio. 16th, Tabor, Iowa; Carthage, Ohio. 17th, Gardiner, Me. 19th, Dubuque, Iowa. 21st, Danville, Ky.; Wytheville, Va.; Tybee Island, Ga. 22nd, Iowa City, Iowa. 23rd, Danville, Ky.; Carthage, Ohio. 25th, Gardiner, Me. 27th, Wytheville, Va. 28th, Iowa City, Iowa; Auburn, N. H. 29th, Iowa City, Iowa. 30th, Iowa City, Iowa. 31st, Wytheville, Va.; Tybee Island, Ga.

*Zoological*.—*Wild geese* were seen, at Nashville, flying S. 17th; St. Louis, Mo., N. 21st; Laconia, Ind., S. and SE. 20th and 21st; Creswell, Kan., NE. 7th; Fall River Mass., SW. 8th. *Wild ducks* were seen at Laconia, Ind., flying S. and SE. 20th and 21st. *Swans* were seen at Baltimore, Md., 4th. *Crows* were seen, at Baltimore, Md., flying S. 30th and 31st.

*Prairie Fires*.—4th, Pike's Peak; 6th and 8th, Creswell, Kan.; 12th, Fort Gibson, Ind. Ty.; 13th, Fort Randall, Dak.; 15th and 18th, Oregon, Mo.

*Zodiacal Light*.—8th, Oregon, Mo.; 13th, 14th, 16th and 18th, Bellfontaine, Ohio; 16th, Nashville, Tenn.

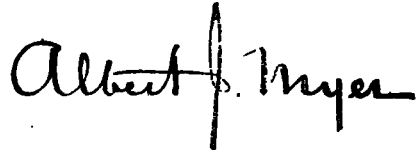
*Earthquake*.—A slight shock was felt in the west end of the city of Charleston on the evening of the 12th, windows rattled and the usual evidences of such convulsions were plainly felt. Wytheville, Va., an earthquake shock, 10:30 a. m., 21st, is reported.

*Meteors*.—1st, Penn., Texas. 2nd, Texas. 4th, Ill., Ohio. 5th, N. J., Penn. 6th, Ill., N. Y., Penn. 7th, Iowa, Md., N. Y. 8th, Ky., Mich. 9th, Md. 10th, Ill., Iowa, Mo. 11th, Iowa, Kan., Mo. 12th, Ga., Mo., W. Va., Wis. 13th, Iowa, Mo. 14th, N. C., Ohio. 15th, Kan., N. Y., Vt. 16th, D. C. 17th, Cal. 18th, Ill., N. C., Texas. 19th, Texas. 20th, Kan. 21st, Ill., Ind., Iowa, Kann., Minn., Mo., Neb., Ohio, W. Va. 22nd, Kan. 24th, Texas. 30th, Penn. 31st, Fla., Texas.

The great meteor of the evening of the 21st was one of the most remarkable that has lately been recorded in the United States; reports concerning it have been received from about 120 stations. From a brief study of these it becomes apparent that the meteor entered the earth's atmosphere somewhere over or west of Kansas or Nebraska, its true course was nearly due east, and it was last seen over the State of New York. Its visible track, as projected upon the earth, is therefore over a thousand miles long. The times of its appearance and disappearance, as noted by the observers, are extremely discordant. The average of about 45 observations, pretty uniformly distributed along its course, gives 9h. 26min. as the Washington mean time, which may, therefore, represent the moment when it was at the middle of its visible path. No definite conclusion can be satisfactorily arrived at, with reference to its actual velocity in miles, from a comparison of the records of distant observers; but the observations of the individual observers, taken by themselves, give velocities relative to the earth's surface of between 1 and 5 miles per second, or 2 to 5 miles relative to the earth's centre, and as the meteor was overtaking the earth in its annual orbit, its velocity in space relative to the sun was 20 to 25 miles, its movement being towards a point in lat. 20°, long. 35°, with reference to the plane of ecliptic. When first seen the meteor appeared to be as large as the moon, but much brighter. In passing over Indiana its main body divided into two portions, and one of these subsequently broke into a hundred fragments, which at first kept together in one cluster, but gradually fell behind each other, forming a long train in single-file and as such passed over Ohio into New York. The brightness of the meteor was everywhere described as far surpassing bright moonlight. No reliable accounts speak of any noise heard during the visibility of the meteor, but in from two to five minutes after its passage a shock resembling thunder was heard, which in the majority of cases was described as tremend-

ous, shaking the ground and the houses, and was especially alarming to those who, on account of the prevailing cloudiness, were unable to see the preceding meteor. The uniform character of the sound heard at all stations shows that it was not due to any violent explosion, (properly so-called,) but was a peculiar acoustic phenomena, depending on the fact that that portion of the line described by the meteor when nearest to any observer, became, as it were instantaneously along a length of several miles, the origin of a series of simultaneous sounds which, although in themselves comparatively feeble, were concentrated into a violent sound when they reached the observer's ear. No records have come to hand of the finding of any fragments of this meteor, nor is it likely that any of any size fell to the earth, as the main body evidently passed out of the atmosphere when over New York, and the smaller fragments or sparks that were seen to fly off were rapidly burned up and disappeared in its train.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

A handwritten signature in black ink, reading "Albert F. Meyer". The signature is written in a cursive style with a large, prominent initial "A".

*Brig. Gen. (Bvt. Assg'd.) Chief Signal Officer, U. S. A.*

Copy furnished for